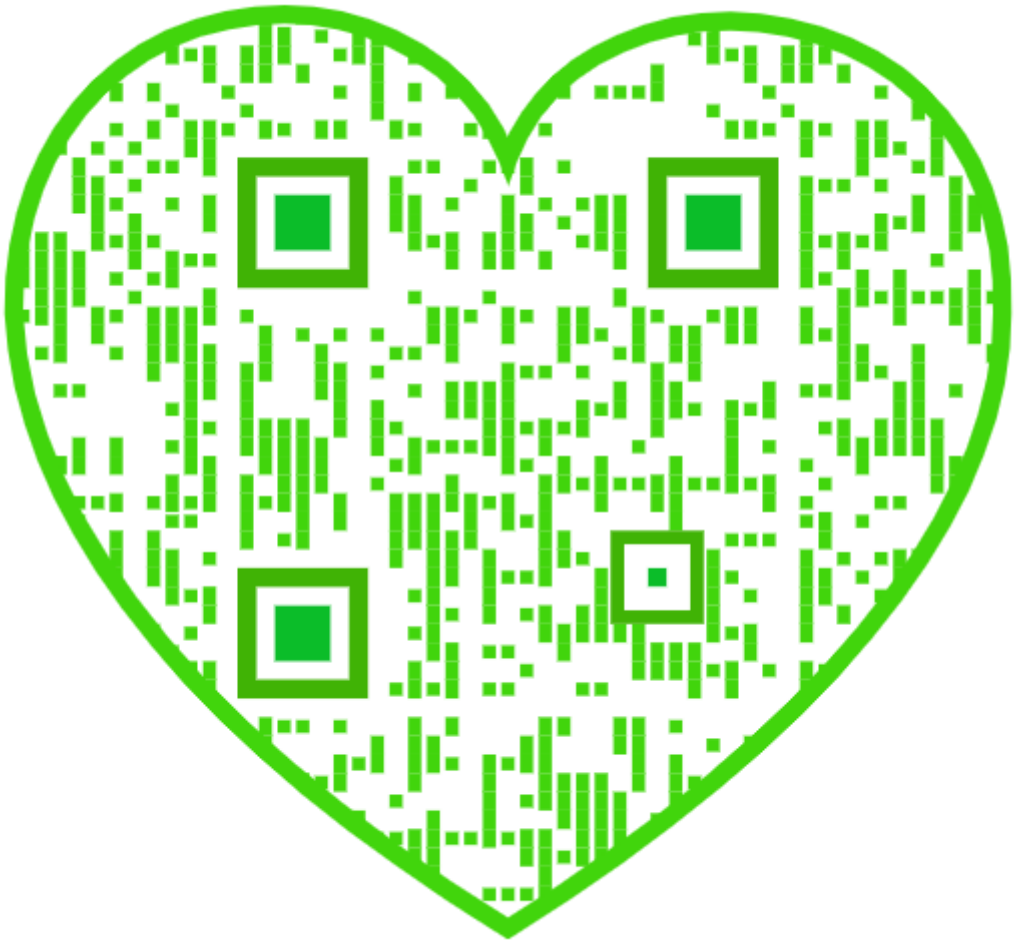
211
9 N7
py 1

The Sweet Potato

How to Grow and Keep It.

By J. GREEN NORDIN,
Russellville, Arkansas



The Sweet Potato

How to Grow and Keep It.

By J. GREEN NORDIN,
Russellville, Arkansas

SR
.S9N7

1912
Courier-Democrat Print
Russellville, Arkansas

©CLA328987

What This Book Contains.

In giving an outline of the sweet potato industry, according to my system of raising, digging, and keeping and selling, I will take it under eleven different heads, as each one needs to be studied separately. While they all are very essential, yet some are of more importance than others. Study each one very closely, and only one at a time, following all directions as given.

These different subjects will be treated under the following heads, to-wit:

1. Selection of seed for bedding.
2. Time for bedding, and different ways of bedding.
3. Selection and preparation of land.
4. Transplanting.
5. Cultivation.
6. Description and sizes of houses.
7. Cost of house.
8. Digging.
9. Keeping.
10. Marketing.
11. Diseases of Potatoes.

Results of My Methods.

Under the methods of growth and keeping of potatoes outlined herein, I have kept potatoes in sound condition for three years. Of course they shrink in size when kept this long, and are not suitable for market, but it shows what can be done with sweet potatoes under my methods.

I have on file in the office of the Commissioner of Agriculture for Arkansas at Little Rock a sworn affidavit to this effect. And in the fall of 1911 I had on exhibition on the "Arkansas on Wheels" train which toured the North and East, samples of potatoes from three different crops (from the years 1909, 1910 and 1911, which were viewed with wonder by thousands who visited this train.

There is no necessity for keeping sweet potatoes longer than one season, as they are always in great demand at highest prices in late winter and at planting time. Keep your potatoes until this time, and you will find ready markets, at double and even treble the prices for which your neighbors sell at digging time.

A Personal Sketch.

In writing this little book, I feel that the first thing I should do is to give a short history of myself, as people generally, when asked to try something new on the testimony or recommendation of some unknown person, usually ask, "Who is he?" "What has he done?" "Has anyone tried his methods and found them successful?"

I was born July 29, 1880, about fifteen miles northwest of Russellville and six miles north of London, Pope County, Arkansas, on an upland farm of 160 acres, in the spurs of the Colony Mountain. Being reared by parents of moderate means, I did not have the opportunity to receive the education that I longed for while young. However, I improved what time I had, studying at night by pine-knot fires for light and following the plow handles by day. In the winter of 1896 and 1897 I managed to take a course in the Atkins High School, and in June of 1897 I managed to pass the Teachers Examination and secured license to teach in the free schools of Pope county. I secured a school and began my first term as teacher on July 28 of the same year, one day before I was seventeen years old. I then followed school teaching and farming, going to school at such times as I could afford to, until I was twenty-two years old. I then commenced the growing of sweet potatoes, which I have followed since with the exception of a part of the years of 1894 and 1895, finding it more profitable than any other occupation I have ever followed.

In the spring of 1902 I commenced work for J. C. Shinn, the pioneer potato raiser of this section, working for him the entire years of 1902 and 1903.

From the age of a very small boy I was always disgusted with the raising of cotton, working early and late and never getting anything out of it except work and disappointments — expecting something, and getting nothing.

So after working for J. C. Shinn in 1902 and making a share crop with him in 1903, I decided that I wanted to raise potatoes for myself. But I did not have the means with which I could do so. In the fall of 1903 I bought a small upland farm, and continued to work for Mr. Shinn until the spring of the following year, when I moved to my own place and worked on the railroad the balance of that year and a part of 1905. Then I went to work on my farm and raised a small crop of potatoes, and have steadily increased my acreage every year until the present year, 1912, I am putting out sixty acres in potatoes and have 135 acres in other crops. I have purchased 311 acres more land, ten head of horses and over $1,000.00

J. GREEN NORDIN.

worth of farm machinery. Some of it is not yet all paid for, but I hope to get rid of all indebtedness this season. I have also erected three potato houses at a cost of $1,300.00, besides several other buildings, including one dwelling tenant house, and have made over $1,000.00 worth of improvements in the way of clearing and fencing land.

So anyone can see at a glance that there is good money to be made in raising sweet potatoes, under the right system of growing, keekeeping and marketing.

I had never thought of writing this book until in February, 1912, when I began to receive a great number of inquiries concerning the keeping of potatoes, as the result of newspaper interviews that had been published concerning my methods and success. Not having time to answer all these inquiries and give everyone an outline, I decided to write this book, making everything as plain as possible, and much more thorough than could have been attempted in personal letters. The price of the book, compared with the information that it gives, is as nothing. While the price is small, it is the only way in which I can give this information to those desiring it, and the sale of the same will reimburse me for the time and expense of publishing it. If I were able, I would gladly give it to all.

If there is any point on which the reader wants more information, or which he does not understand, enclose stamp and I will try to make it plain.

Respectfully yours,
J. G. NORDIN,
Russellville, Ark.

Transplanter at work Putting out Slips.

Selection of Seed for Bedding.

In selecting seed, always be sure to get sound potatoes. If possible, get them grown on different kind of soil from that on which you intend to plant, as potatoes grown on deep, sandy, bottom soil, make better seed for up-land, as they are always long and have a tendency to produce longer potatoes on up-land The longer sweet potatoes are, the better sample they make, if they have plenty of size. Likewise, seed from up-land is better for planting in bottom land, as it tends to make large potatoes and not too long. I find it best to change seed every third year, if not oftener.

As to the size of potatoes for bedding, some prefer large, while others select small. In my ten years' experience I have found that, everything considered, size is of but little importance. The more surface you have, the more room you have for plants; and of course there is more surface on a bushel of small potatoes than on a bushel of large ones. If you are bedding on a hot-bed, you will find that small potatoes will sprout quicker than large ones, although large seed will make thriftier plants than small ones. But I do not think the plants from the larger seed grow off any faster.

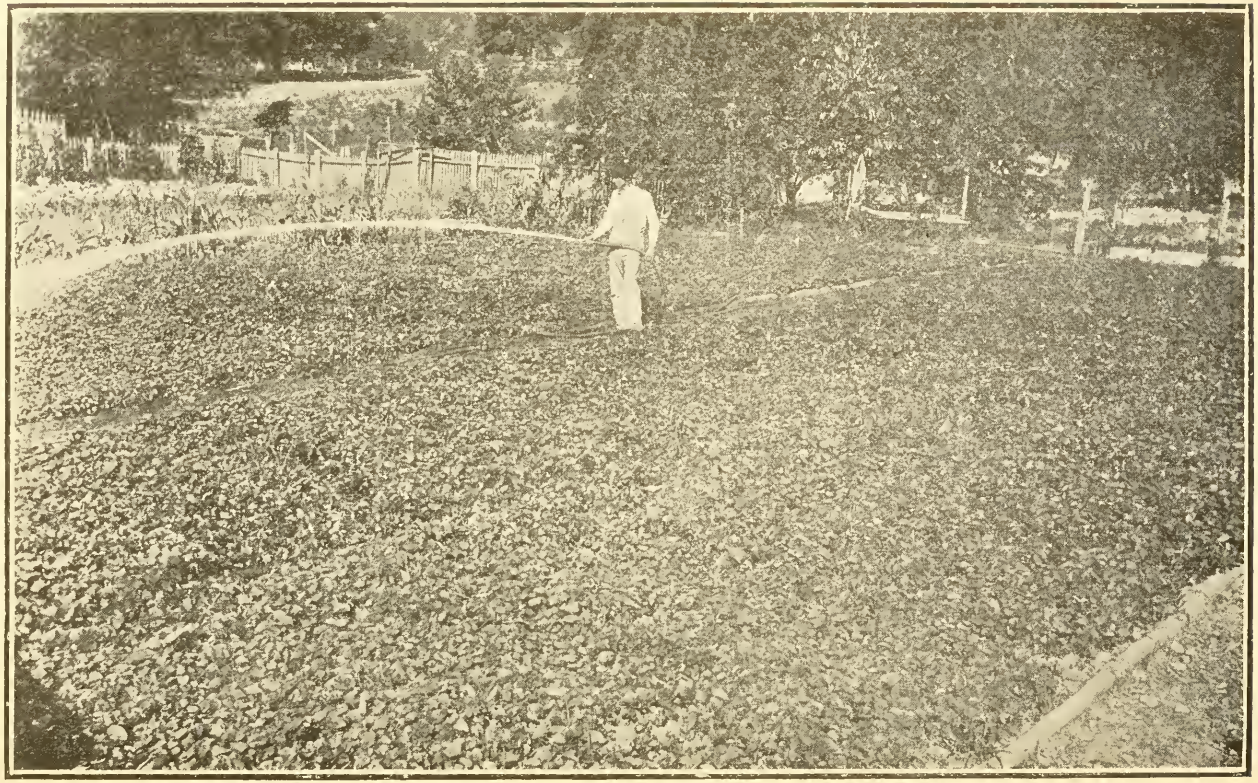
If you are bedding just plain bed, the small potatoes will go much further than large ones, and will "slip" quicker and oftener. 1¼ bushels of small potatoes will cover as large a plot of ground as two bushels of larger ones.

In selecting seed, be sure they are free from all diseases, such as are described in the last article of this book. If you have a diseased potato to start with, it will be sure to show up on you later in a way that is sure to cost, as the disease is carried into the plants, and of course into your next crop of potatoes, and it may cause you to lose a whole crop.

Time for Bedding.

The best time for bedding varies in two ways, depending upon the manner in which you bed, and the locality you are in.

If the bed is to be made a hot bed, the seed may be bedded as soon as safe from freezing and frost killing plants. In this section of Arkansas about the 15th of March is as early as it is advisable to make a hot-bed, for if you get plants up, they would be of no use, as frost would be sure to kill them down. And plants bitten down by frost are worse than no plants at all, for they will sprout out at top of ground on the old stub, making no root at all, and while the old



Watering the Potato Bed. You can't get too much water while plants are growing, especially in dry season.

stub is on the potato, it will not sprout again. So it is not best to try to bed too early, hot-bed or not. Furthermore, early bedding is likely to rot the potatoes, probably causing the loss of a crop.

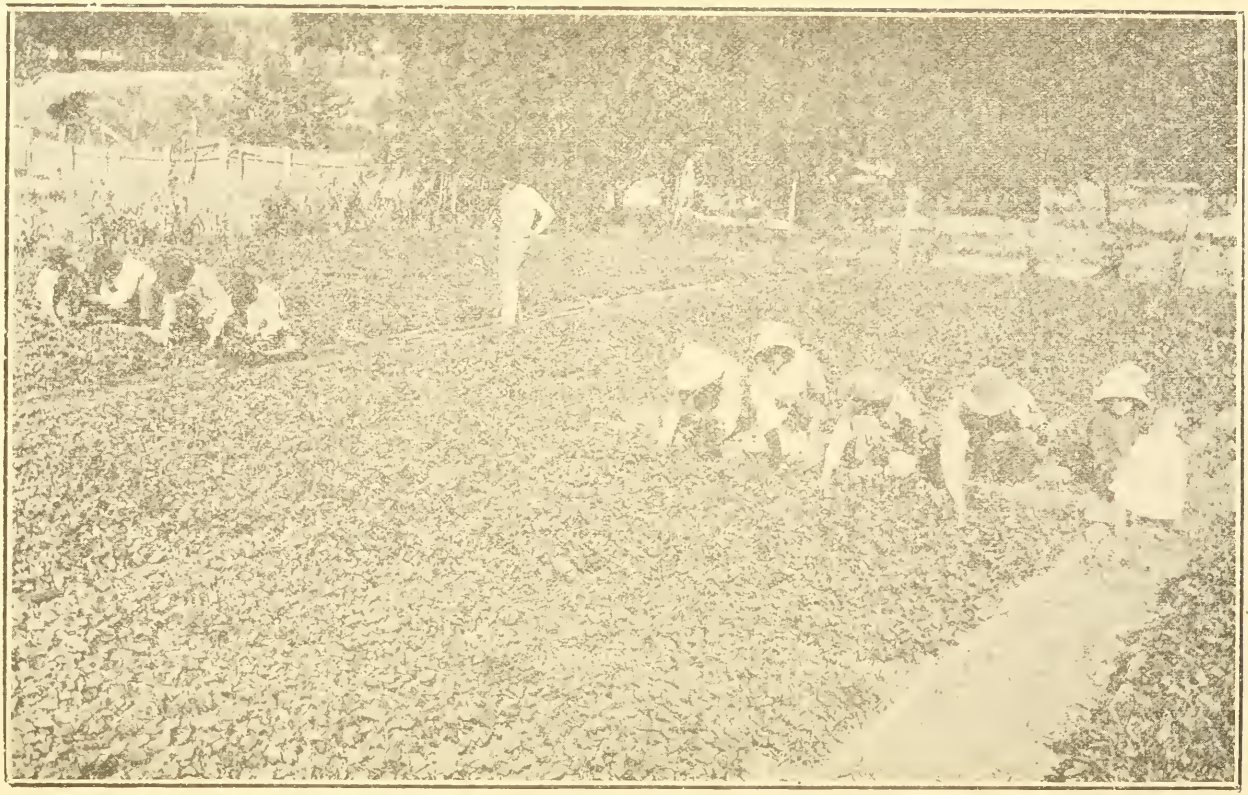
For common beds, April 1st is early enough. If you put them in the ground too early they are almost sure to rot, as sweet potatoes positively cannot stand cold weather. I have seen some exceptions where they could have been bedded earlier.

Making Small Hot-Beds.

Making hot-beds is very easy where there is only a few bushels to be bedded—ten bushels or less. There are various ways of making the hot-bed. About the least expensive is made from stable manure, or any manure that has not been moulded or wet. It must be of a nature that when you move it it will heat. Another satisfactory system that I often saw used when a boy, was to use cotton seed, packing the seed down tightly and burning with hot water. Green pine straw is good, and really I believe will hold heat longer than anything. Most anything can be used that will go through to a heat after being packed down and wet.

The system most generally used for hot-beds is to remove dirt about ten inches deep, then place dry manure (or whaetver is to be used) about four to six inches thick, packing down tight and wetting through. Then cover about two or three inches with rich dirt. Then place potatoes as close together as they will lie in the bed without touching, and cover with about 2½ inches of rich soil as can be gotten. If available in no other way, take the dirt which you have taken from the ground in preparing for the bed, and mix with manure. After bed is finished, keep covered if rain is threatened, as a cold rain would be sure to rot the potatoes, for the manure will get very warm when wet. A good, long themometer should be placed in bed with the bulb on a level with the potatoes and the top extending up out of the soil. When potatoes begin to get dry, water should be warmed up to the same temperature of the bed, or a little above, and the bed moistened. If weather should turn very cold, bed should be covered with old sacks or something to exclude the cold air. A hot-bed will not stand cold weather or rain, and a sudden change will ruin the potatoes. Amount of water to be put on bed varies according to weather conditions. With damp, cloudy weather after the bed has been wet through, it does not need to be watered, as too much water at the wrong time is injurious. But when the sun is shining warm and you do not have cold nights, you can hardly get too much water on the bed.

Then after each time of drawing off the slips, the bed should be watered to settle the dirt back to the potatoes, for pulling off the slips generally pulls them out of place.



Pulling Plants From Bed for Transplanting. Size of Bed, 72x90 Feet.

For Bedding in Large Quantities.

The best and cheapest method of bedding a large quantity, say ten bushels or more, is simply to make the ground rich as possible in January, by breaking your bed ten or twelve inches deep and mixing manure with the soil thoroughly. It does not matter if it is one-third manure—only the better. In this section, from March 25 to April 5 is the best time to bed in this way. After having been prepared in January as stated above, when you are ready to bed out potatoes the ground should be coated with well pulverized manure and broke to a depth of about six inches. Then take off about three inches of dirt. Dig up and pulverize good to another depth of about three inches, and place the potatoes as in a hot bed, so as not to touch each other, and cover with the first dirt taken off, smoothing the bed nicely. Then keep watered well, except in cold, cloudy weather. At no time will a bed prepared in this way have to be covered from rain, as there is nothing in it to cause heat when wet. While a cold rain does the potatoes no good, yet there is no danger of rotting, as in the hot-bed.

Beds prepared as above, except in a very cold April, will be covered with plants by the first of May. They will then sprout again after May 1st as quickly as any hot bed, and does not take as much water. After pulling plants, be sure to water at once, so as to set dirt back to potatoes. Then water successively every other day until rain comes, for they cannot get water too often after May 1st, unless the weather is very cloudy and cool.

If the grower has a reservoir or tank to water from, it helps greatly to use laundry soap. This may seem expensive, but it is cheap compared with the results you get. Soap may be secured very cheaply if bought in barrel quantities, like the laundries use.

In arranging beds, they should not be made more than ten or eleven feet wide, but may be as long as desired. Something should be placed on either side of the bed to keep it from washing down. The planks or whatever is used on the sides as a curb should be elevated enough to hold a ladder twelve feet long, which may be placed across the bed and used to walk on when pulling off plants or weeding the bed.

In locating the bed, it should always be where the sun can shine on it all day. If the bed cannot be entirely free from shade, it is best that the shade be on the bed in the evening. Water beds late in the afternoon or at night, so as not to scald or bake. When the sun comes up the next day the water will be settled down so that there is but little if any danger of scalding the plants. Plants scalded do not start to growing as well as if not scalded. If watered in the morning when the weather is not cloudy, the plants will scald, and if the plants are not up the ground will bake.

For Larger Hot-Bed.

The best plan to make hot-beds on a large scale is as follows:

They can be made cheap or they can be made expensive, but they will last longer if made as outlined below:

Prepare the bed same as for common beds described above. Then commence on one side and dig a trench 12 to 14 inches deep the full length of the bed. Turn at the end and come back 20 to 24 inches from the first trench, and so on, digging the parallel trenches until the bed is covered. Put into these trenches 1½ inch piping, commencing at one side and following the trenches until all the trenches are taken up. Connect one end of the pipe into the tank, and the other to pump and from pump back to tank. The tank may be made of lumber. Small pipes should be run from tank to furnace, where water can be heated and then pumped through the pipes under the bed. In this way the bed can be kept at any temperature desired, governing the water and bed by thermometer.

This bed should be prepared so as to be covered during cold rains, as too sudden a change would rot the potatoes. A bed as described above will not prove very costly, as the tank may be made of wood, and a common thresher pump may be used, with a small gasoline engine to operate the pump. The piping is the most expensive item. But this system is well worth while, as it is far more reliable than any other and does not depend upon unfavorable weather conditions.

Selection and Preparation of Land.

The proper selection of land is a very essential feature in the successful growing of sweet potatoes. Most any loamy up-land will make good potatoes. Clay subsoil is also good for them. Sandy bottom land, when not too rich, or made land is the best that can be had. Poor sandy bottom land, fertilized, is also fine.

The preparation of the land is also most important. Not later than the first of February the land should be cleaned of all trash. Subsoiling is fine if done in January or February, but not advisable if done later than March 1.

Break the land as early as possible. Upland should be broken 5 to 7 inches deep; bottom land 7 to 10 inches deep. If land is subsoiled, go as deep as four 1000-pound mules can pull in bottom land, and two mules in upland, with a regular subsoiler. This may seem very deep to some, but it is best.

After preparing soil as above, keep it in good state of cultivation, harrowing and discing as often as is needed until plants begin to come on the bed. Then ridge the ground for the plants, preparing enough ground to care for what plants will be secured at the first pulling-off, allowing about 7,500 plants to the acre. If you are to use a transplanter, do not prepare your ground into ridges until you

are ready to transplant. (And right here I wish to say that the Fuller & Johnson Bemis Transplanter, of Madison, Wis., is fine, and cannot be excelled.) Ridges dry out more than level soil does. The transplanter waters the plant as it is set, and I would advise anyone who is raising as much as two acres or more of potatoes to purchase a transplanter. On that acreage it will almost save its cost in one season. Besides, you can set cabbage, tomatoes or anything that is to be transplanted, with it.

In selecting land suitable for raising sweet potatoes, if the planter is not prepared to analyze his soil, it may be sent to any State University, where it will be analyzed. Or any fertilizer manufacturer will gladly do it for a small sum. Always select land that will drain, either naturally or by absorption. Land that is wet natured (crumpish, as some call it) is all right if it will drain itself, but if it is level it is no good, and might cause rot before potatoes mature. Of course this kind of soil does not give the production that better land does.

In preparing ridges the width should vary according to fertility of the soil. Good bottom land should be 3 feet and 9 inches to 4 feet wide. Some land will bear rows as close as 2 feet and 10 inches, but this is not best. Better results are obtained from wide ridges than from close ones.

Method and Time of Transplanting.

Transplanting can be done in this section of Arkansas as early as the slips can be grown, and as late as July 25, and make some potatoes, but about June 20th is as late as they can successfully be set and depended upon to make potatoes large enough for eating purposes. Of course in extremely favorable seasons they may do well planted later. The latest I have ever set was on August 8, in 1903, when I made a few seed potatoes, but very few. The latest to make good potatoes was planted July 16, 1906, and made some large enough for eating purposes. I do not approve of setting later than June 20, unless one has ground set aside for potatoes and has nothing else to plant on it.

There are several conditions under which plants are set. The best way, and under which plants start to growing quicker, is to have land in fine state of cultivation put into ridges as soon after rain as can be plowed (not too wet), set out and watered. The wet ground should then be covered with fresh earth to prevent baking or crusting. Plants may be set by hand, but this is very slow work and hard on the hands, and the plants do not grow well. They may be dropped with root-end in a straight line on the ridges and pushed down with forked sticks. Push plants down as far as they will go without pushing the buds under. Pack dirt firmly around the roots and fill hole up with dirt.

The above system is the way in which I have put most all of my

The Bemis Transplanter at Work, Showing Tank for Watering Plants in Dry Weather.

previous crops, having my ground prepared and following above plan after a rain sufficient to wet the ground. However, they do not grow off as well as under other systems of transplanting.

As to transplanters, I have never used one until this season. I find they save considerable time, and leave the plants in a much better condition for cultivation, as they are in a straight line and may be plowed without using a scraper. Using a transplanter also makes a difference in the growth of the plants. As previously stated, plants set and watered start to growing quicker, which of course means more potatoes in the market.

In transplanting, do not bruise or mash plants if it can be avoided, as it tends to stop growth.

If short on plants, cuttings are fine to set out. Cut them 8 to 10 inches long and put all in the ground but 2 to 3 inches. Water well at bottom and fill around with loose soil.

Improving Variety of Seed.

If variety of potatoes are to be improved, cuttings is the best way to do it. Select sound, smooth potatoes and bed them separately from your regular crop. Pull the first plants as soon as they appear, so as to get them out of the way. Then take the second plants and transplant them in your improvement patch. Cultivate quickly, so as to get a good growth of vines. If you want to grow short, large potatoes, get your cuttings from the shortest vines. If long, slim potatoes are desired, cut from the longest vines, and set as above. Repeat the above year after year. Potatoes can be grown as desired as to size and shape.

A few words about mixing the different varieties. Some claim that sweet potatoes can be mixed, but I have never seen it in that light yet. I have been on the constant lookout for anything that might prove to be of any advancement to potatoes, and have found nothing that tends to show where they would possibly mix, unless it was from the blooms. Some may not be aware of the fact that sweet potatoes bloom. And they do not bloom very often. I have hunted acre after acre for them, and have never seen but three or four blooms in my life.

Now, could it be possible for them to mix through the bloom? It would be very hard to get the blooms from two varieties together, for all who know anything about mixing different varieties of anything know that it has to be at a certain stage to get the proper results. With the blooms so rare as they are on sweet potatoes, this would be very hard. It is my opinion that sweet potatoes do not mix, and in all my observation I have found nothing that proved that they will mix.

Using the Transplanter.

A few more words in regard to transplanter. Since writing the above on transplanting I have used a transplanter extensively, and

find that a potato grower can profit greatly by using them. They help out so much in the cultivation afterward.

I will give a short system which I find is good to use in this connection. Prepare ground the same as for transplanting by hand. Instead of making it into ridges, simply take a cultivator disc and turn the discs together—that is, so they will throw the dirt together. Make as high a ridge as possible with the disc. Go over this ridge after every rain if possible, pulling the ridges up higher each time, killing all grass and weeds that may have come up, if any. Keep up this system until your crop is all transplanted. In case there is excessive rains and ridges become hard and bed is backward it might be necessary to re-ridge potatoes. This gives a good plant bed, keeping it free of foulness and making it much easier to cultivate, as they are in a straight row and in good shape. That is, they are standing up straight.

In buying a transplanter, I would advise the Beemis, manufactured by Fuller & Johnson, Madison, Wis. I find theirs to be a fine piece of farm machinery and does the work to perfection. The two cuts in this book are from the Beemis transplanter at work. With this implement you can set anything that is to be transplanted—sweet potatoes, tomatoes, cabbage, strawberries or other plants.

Cultivation.

NO. I.

The cultivation of sweet potatoes depends more upon fertility of soil, growth of vegetation and rainfall, than upon anything else. Most of the expense of cultivation should be for work done in preparation of the soil before potatoes are transplanted. If the land is properly prepared and well pulverized before transplanting, the crop will need but little cultivation further than to keep down foulness, unless hard, packing rains come. And right here I wish to state that most any land that will grow sweet potatoes will surely grow crab grass, good and plenty.

The first cultivation I give my potatoes is to scrape them very shallow as soon as I get rain after transplanting. Then hoe all grass and weed out that may have come up, filling up holes around the plants that may not have been filled in transplanting, for in case it should rain after transplanting before cultivating these holes, fill with water and bake. Then plow with as large sweeps as they will bear, say 18 to 22 inches. Then I do not bother them any more until they begin to vine (unless I have a vineless potato, which takes more cultivation.)

I then take and hoe and cut all weeds that may have come since

the last cultivation on top of drill and on the sides of ridges, turning the vines all one way and leaving the middle open. I then plow with a 24-inch sweep or larger plow, if need be going three times to each middle that is open—in other words, every other middle, leaving the vines in each alternating middle, which is not plowed at this time. After a week or ten days I throw the vines into the middle that was plowed before, leaving the other side of the row open, and plow it the same as the first, three furrows to each middle, with same size plow as used at first. This makes a good sized ridge. And bear in mind that the higher the ridge at laying-by time, the more potatoes at harvest time.

NO. II.

I give this mode of cultivation (No. 2) for the benefit of some people who like to tear the ridge down to start with and then build back with cultivation. This plan would be a success in case of a very dry season, as the tearing down and building back would tend to conserve the moisture and make the potatoes grow in dry weather. But in case of a very wet season, which we sometimes have here in Arkansas, it would tend to make the vines grow so fast that one would have no chance to work them more than once. They would be too long for any success in cultivating a second time. Turning the vines a second time, especially if they are large, is very injurious. And without a second cultivation you will get no ridge to them, and too low a ridge at laying-by is sure to mean a short crop as compared to a higher ridge. So my advice is always to keep the ridge as high as possible, especially at last cultivation.

Keep the soil in good state of cultivation before transplanting and you will have no trouble in keeping moisture afterward. Your only trouble will be to keep down the weeds and grass, which are sure to come if the soil is at all adapted to potatoes.

In giving a system for cultivation with low ridges—Take cultivator and any scraper adapted to their use and scrape very deep and close. Hoe out all grasses and weeds, if any, and then plow with small plow, something like a 14-inch sweep. Continue this every six to ten days until the vines get too long for plowing.

Where a transplanter has been used the cultivation will be found much easier than if transplanted by hand, as the plants are more regular and in a straight line, which insures closer work, so you can get all weeds and grass that come up while plants are small and tender.

You can then plow with small or large plows, as you like.

After potatoes that have been put out with a transplanter, I always use a 16-inch sweep to begin with and follow up with about a 20-inch sweep. In that case you will have to plow them three times at least, but only having to turn the vines one time. You will never have to use the hoe at all, as you can keep all grass and

weeds down with the plow. But under this method you will have to turn the vines at laying-by time, as no ground that will make good sweet potatoes can be laid by with vines short enough to plow without them getting so grassy or weedy that they could not be dug with any satisfaction. Also, it would cut the production down considerably, and as production is what you are growing the potatoes for, you want all you can make.

The Potato House.

The potato house is the most important thing in the potato industry, as this is the place in which they are stored until suitable time for selling, but no potato house will keep potatoes within itself, without outside assistance. Lots of people think that if you can keep sweet potatoes from freezing, that is all that is needed to keep them. That system may prove all right some years. But merely to keep them from freezing and rotting is not sufficient, especially if you are to ship your ptatoes, as without proper treatment they will be juicy and full of water, and they are easily skinned and bruised when moved, and rot quickly. They will not stand the change of air from cellar to open air.

There are several systems by which you can keep sweet potatoes from freezing, and probably keep them through so that some of them will sprout in the spring. But most of these methods do not give the results they ought to, for as costly as sweet potatoes are in the spring, they ought every one to sprout. After making all the potatoes you can, the next thing is to keep every one of them, for all that rot are a total loss—and a very expensive loss, as the cost of producing is thrown away.

I will give a few of the systems I have seen used, with which I suppose most people are more or less familiar. The one perhaps used more than any other is a cellar dug out under the house or some building, and usually drained to lower ground by a ditch. It has been my observation that at least 50 per cent of the potatoes cared for in this way rot. The rest are hardly ever marketable potatoes, as they are stained by the rotten potatoes with which they have come in contact. Often part of the rotten potatoes are stuck to the sound ones and dried. And even though the potatoes may be sound and good looking, they will not stand shipping, as sudden changes cause them to rot rapidly, and as stated before, they are easily skinned and bruised.

Some use a stove in their cellar to keep potatoes from freezing during cold weather. But this is no good, as the potatoes cannot get air in an underground system, and if you take air away from sweet potatoes in cold weather they will not ship, as they will go down

(rot) when they do get air. When put in cellars and processed right they will keep better than with any of the old systems, but they will not be in as perfect condition as if housed above ground.

Then I have seen them put in hills—that is, piled up on the ground, with straw, grass, corn stalks, brush or something of the kind under them and spread over them, and then covered with dirt to a depth of 4 to 10 inches. This will keep them some winters, and they are fairly good if used fresh when first taken out of the hill. But they will not bear shipping at all, as they will generally rot in from 24 to 72 hours.

For strictly home use, putting up in dry sand is very good and will answer where there is no means of building a house. If sand is available, it is a very cheap method. To put up in this way, put the potatoes in some shed, where they will keep dry. Mix the sand all the way through the potatoes, and be sure to cover deep enough to prevent freezing. They will keep just as they were when dug, and taste the same. They can be sold to local markets, but potatoes kept under this plan will not ship any distance. They will not stand up long, and will hardly keep as long as when fresh dug.

None of the above plans are good, and to rely upon them at all is very costly experience, as one is always in doubt as to whether his potatoes are going to keep or not. After growing and digging a crop, it is no sane policy to let them ruin through carelessness or by trying to save the expense of a properly constructed house.

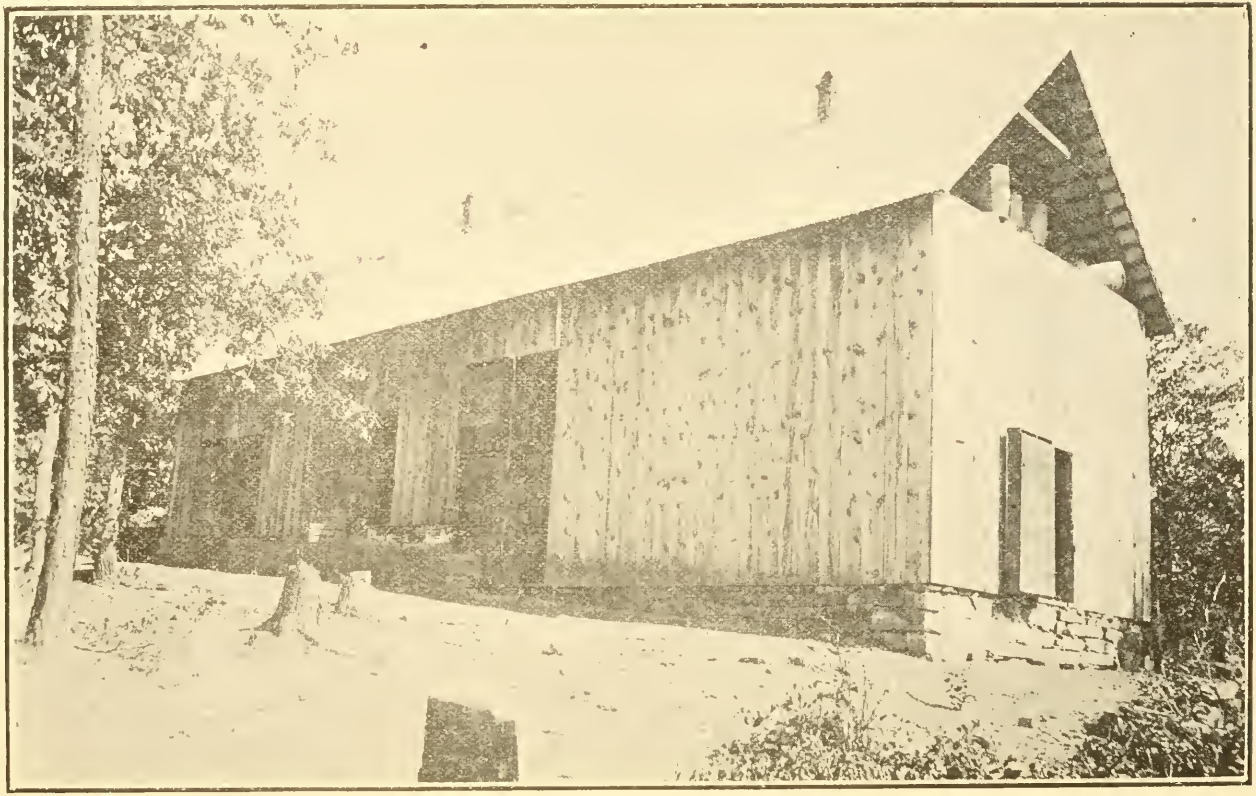
Keeping sweet potatoes is a very simple matter after one has become accustomed to their requirements. It takes all the year and four months of another year to complete a crop. In other words, four months of one crop is connected with the previous crop.

Properly Built Potato House.

In describing properly built potato house, I will first give an outline of how they must be built to prevent the potatoes from freezing, and to keep them air tight when so desired.

Houses can be built of different materials, such as brick, stone, concrete or lumber. I prefer lumber, as it is by far the cheapest of any. Brick, stone or concrete walls have to be built so they will not sweat on the inside, or lined with lumber to prevent dampness from coming in contact with potatoes, for dampness is sure to cause them to rot. This is very expensive, for any of the brick, stone or concrete houses, if not built with air spaces, would soon rot out the lumber lining.

The thickness of the walls must be determined by the material used. If brick, stone or concrete, for a house 20x20 feet, 12-inch walls will be sufficient. If house is to be larger, say 20x40 feet, the walls should be 12 or 14 inches thick, for the larger the house, the harder to keep warm. (The above is from actual experience, as I



Potato House with walls and extension built later with 16-ft. walls and 4 tiers of bins. Size, 20x66.

have the two sizes on my farm, as shown by pictures elsewhere in this book.)

For houses constructed of lumber the thickness of walls should be as follows:

For house 20x20 feet, walls should be 12 inches thick.

For house 20x40 feet, walls should be 12 to 16 inches.

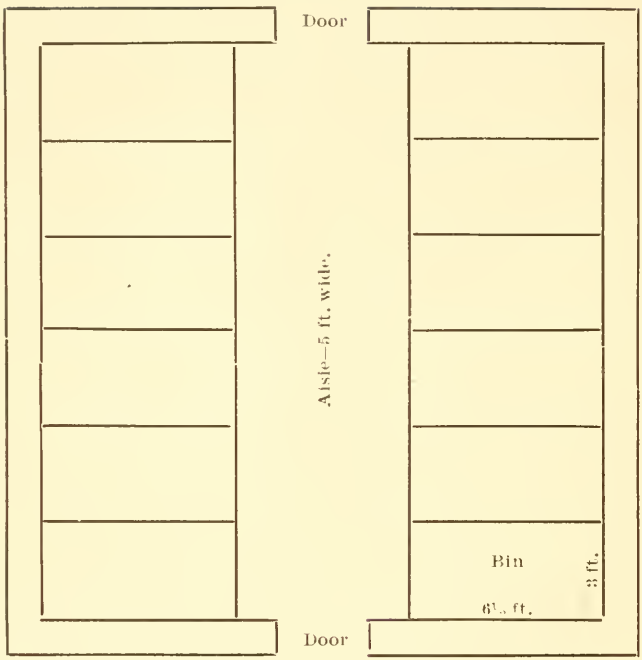
Above specifications are for this section and temperature. Further north the walls would have to be considerably thicker to resist the cold. Above thicknesses are for inside measurements, or for the space between the walls that is to be filled with sawdust or whatever filling is to be used.

In building a potato house the foundation is essential, and must be of brick, stone or concrete, concrete being the best. Foundation can be built in different ways. For the location of potato house, I would advise the side of a hill or slope if possible, so that one side of the foundation may be raised to the level of your wagon box for convenience in loading. The opposite side of course will not have to be built up high, thus saving considerable expense in building. The foundation then wants to be filled to a level with top of foundation, and covered with stone, concrete or brick, so as to keep rats and mice from scratching dirt up in piles under the bins or shelves, which cuts off ventilation and causes the potatoes to rot. If stone floor is used, I would advise covering with clay to a depth of 1, 2 or 3 inches. If concrete or brick, loose dirt of any kind will do This covering is to prevent dampness, which will be sure to rise if not prevented.

It may seem expensive to some to go to this expense for foundation, but it saves quite a lot of trouble and expense afterward and will be found money well spent. Being elevated, it makes the loading and unloading so much easier, as your wagon is on a level with the floor. It also prevents damage by rats, which is sure to be great if not avoided against.

For a frame or lumber building, after preparing the foundation in the above way, oak sills should be used. If house is 20x20, sills should be 4x12 inches, 20 feet long. If 20x40 foot house, sills should 4x14, 20 feet long. These should be put down on fresh concrete, so as to be air tight, and well fastened together at the corners so as to make them hold together. Then the studding should be set. Studding may be full width of thickness of wall, but is very expensive. I use 2x4 oak studding, as they last much longer than pine. Studding should be cut 12 feet long for outside and 10 feet for inside. Nail well to sills and tie together every two feet to top of wall, so as to keep them from spreading when wall is filled. Put your plate on inside studding, and then place your joists on top of inside studding or plate rail. This leaves space on top of loft to put about 16 inches of sawdust or whatever is used for filling. The floor on top of joists wants to be perfectly tight, so as to let no air escape. If the top and walls are filled with sawdust, it is well to have all walls,

DIAGRAM A.



Floor plan for house 20x20 feet—(Scale—6 feet per inch).

as well as flooring overhead, very tight, or the sawdust will sift through.

In setting the outside studding, they have to be set in about two inches, so that 2x4's may be nailed every three feet around the outside of the studding, to which the boxing is to be nailed. This gives a straight line from sills to plate, making the 2x4 nailed to studding come in line with the plate and giving five places to nail the boxing to. Boxing for outside wall must be nailed on perpendicular, otherwise rain will blow in and wet the sawdust, rotting the entire building. The outside wall may be weatherboarded if desired. Boxing for the inside wall should be nailed horizontal so as to help brace the building. Cracks in the inside walls will not have to be stripped, but strips are necessary on outside walls.

In putting in studding, be sure to put in braces for doors, for the doors are very heavy and will soon swag down if not properly braced. Places for doors will be shown in diagram for the two different size houses described herein.

Roofing may be done in any way suitable to builder. I always cover with galvanized iron. Any roofing that will not leak is good, but I would advise galvanized iron roofing altogether, as it is so much safer from fire and is generally much cheaper than a shingle roof.

Doors and Air Holes.

Doors should be 3x7 feet. In setting the studding on either side of door, it should be set flaring on one side so as the door will shut up tight. The door should be eight inches thick, made of lumber and filled with sawdust. Edges should be well padded to insure the door being air tight when needed.

House 20x20 feet should have two doors and two air holes.

House 20x40 feet should have four doors and six air holes.

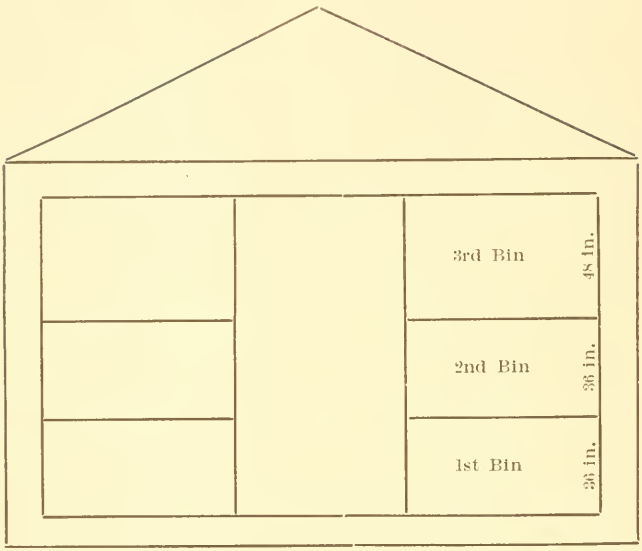
Air holes should be made as follows:

A hole about 10 inches square should be cut in the loft, and a box 18 inches long by 12 inches square made and fastened to loft over hole so as to keep sawdust from falling through. These should be fixed so as to be closed during cold weather and in processing time. A house 20x20 feet should have one air hole in opposite walls of the house, or two holes in the loft near the edge on opposite sides. House 20x40 feet should have six air holes, one in each corner and one midway on each side.

Remember these air holes must be made so as to close up air tight. A wad of old sacks crammed down in them is a very good makeshift, but not the best. A lid made with padded edges can be used, fitting down over the sides of opening. By having this preparation there will not be so much danger of being caught in a cold snap with nothing to stop the holes with.

The inside of the house will be explained by description and diagram.

DIAGRAM B.



End View of house 20x20 feet. (Scale—6 feet per inch).

Aisles and Bins.

The house 20x20 should have an aisle five feet wide. As the inside measurement of the house is only 18x18, this leaves 13 feet for shelves or bins. There should be five studdings placed at equal distance on each side of the aisle, with the bottoms put on solid foundation and the tops fastened to joists. These should be 2x4 inches, 10 feet long, of good sound pine or some soft wood, as the nails will have to be drawn out during the shipping season.

From these studding to the walls on either side place sleepers 2x6 inches, 6½ feet long. These should be oak. The first tier of sleepers may be placed on edge on the floor of the house and fastened by nailing one end to the studding and the other to the wall. Floor these sleepers with 1x3 inch strips,do not nail them, placed one inch apart, leaving a one-inch crack or opening between these strips or narrow boards. Three feet above this floor or shelf place another set of sleepers and floor like the first, being sure to brace well so as not to give down when loaded with potatoes, as there will be considerable weight on them when loaded. My way of bracing is to nail 2x4 on studding, letting it extend from lower sleeper to sleeper above, and the same way at the wall. This makes a good post under each tier of shelves.

Then build the third shelf or bin the same as second, which will make it 6 feet from bottom bin, or 6½ feet from floor of house.

Then fronts of bins should be latticed with 1x3's, same as floor of bins, using about five strips to each bin. This gives about 20 inches front for potatoes, which, when sloped back to 1½ to 2 feet from front, will come up to bottom of sleepers above, leaving plenty of air space.

By following this system—six inches to start with on bottom for sleepers, then each bin 3 feet deep, then putting 30 inches of potatoes on the top bin, leaves a space of 12 inches between potatoes in top bin and the ceiling for air space. As each bin is 36 inches deep, potatoes want to be put only 30 inches deep. This leaves an air space of 6 inches between bins, which is as little as they can do on.

Study diagram closely, paying close attention to all heights and measurements.

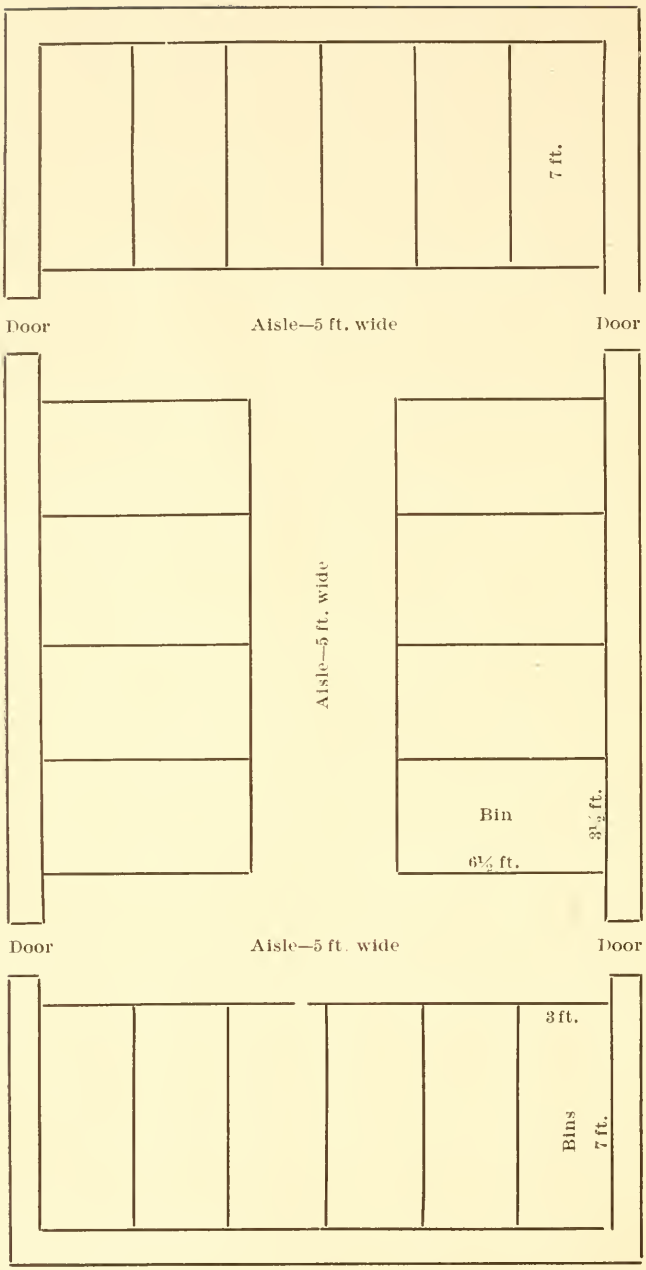
The 20x40 house is on same plan in regard to height of bins and spacing, but the arrangement is different, as the reader will observe by studying the diagram.

The strips for fronts of bins should have arms put on studding (for shelves or bins) up near ceiling, so that the strips may be piled up on them when not in use, so as not to be lost when needed. Then they can be taken down one at a time when digging.

Filling for Walls.

A few words about filling the walls: Sawdust, when obtainable, is the best and cheapest for filling. But one thing to be guarded

DIAGRAM C.



Floor plan for house 20x40 feet. (Scale—6 feet per inch.)

against carefully is to see that it is dry, or it will rot the walls out in a very short time. Sawdust put into walls wet never dries until it rots. It forms itself into hard lumps and then draws apart (if it has not rotted the walls out by this time) and leaves air space, causing potatoes to get too cold if there is any freezing weather to be guarded against.

I have found it expensive to repair walls after they have given away. The rotting of the sawdust not only rots the walls also, but will rot the studding and the sills, and cause your potatoes to overheat at the wrong time.

Cotton seed hulls are fine to fill walls with. They can be tamped in good and tight and the walls will never have to be refilled, as will be the case when sawdust is used. Sawdust will shrink every year, no matter how dry. It shrinks about 5 per cent every year, and the walls must be kept full at all times. If the builder is near a cotton seed oil mill he can get refuse hulls very cheap, and then his wall troubles are done.

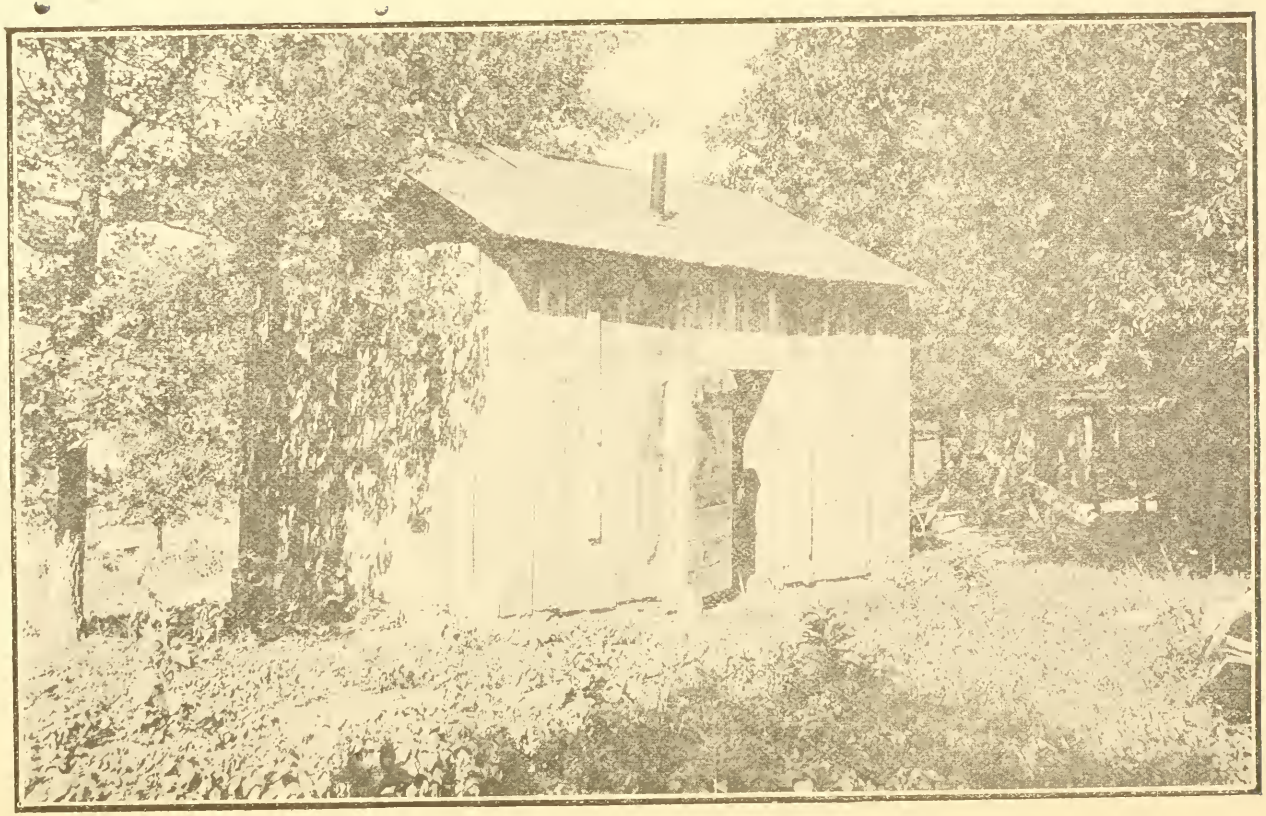
Small or very fine shavings are good if put in tight. If shavings are to be used as filler, walls should be made a little thicker, as they do not exclude air as well as sawdust or hulls, as it does not pack down as well. Another objection to shavings, is that they give too good a retreat for rats and mice, causing trouble in that way.

Coal cinders make a good wall. If cinders are used the walls should be braced heavily, as cinders are very heavy. I have seen cinders used (not in potato houses) to fill walls with, and they seem to be very good. If put in dry they will never rot the walls I know of one house packed with cinders that has been standing sixteen years, and it is still in good condition.

Another thing about finishing of house: If it is available, beat up slate rock and put all around the house to a depth of five or six inches, and for a distance from house of five or six feet all around the house This will greatly protect the wall from rotting at the ground. This is especially advisable if the house is very close to the ground.

Follow These Directions Carefully.

And, Mr. Reader, in building a potato house, bear in mind that all those little precautions must be observed, or it will take hard money to pay for mistakes. I have had them all, but have learned them from experience, and some of them at a good, round price. But you can avoid these by following my directions carefully, and using plenty of caution. Too much caution cannot be exercised in preparing your potato house. If your house is properly built and ventilated, and instructions followed which will be given later on in this book, there is no need of losing any potatoes, even though you be a beginner in the business. But I would advise a beginner to go at the business on a small scale until he is familiar with the principles of keeping potatoes.



My first Potato House. Built in 1906. Size 18x20.

Cost of House.

The cost of house depends altogether upon the price of materials and cost of labor. In some locations, where there is no lumber and brick is cheap, as in some portions of Oklahoma and Kansas, it is much cheaper to build of brick than of lumber. But in most sections of Arkansas lumber is cheaper than anything else. I can give almost to a dollar what the two model houses described herein will cost at a stated price for lumber. The cost of foundation will vary according to material available for its construction. In some localities where rock is available, the cost of getting it out is not so heavy as having to buy shaped stone, but to buy crushed stone, sand and cement is very expensive. But even this is cheaper than stone, where stone is not to be gotten easily. Concrete is very nice for foundation, and also for the floor of house, but concrete floor must be covered with dirt deep enough to absorb moisture, and not make it damp, either.

As to cost, if built of lumber: There is no use to use expensive carpenters, except a foreman to plan out building and carry out the plans. Any person who can use saw and hammer can do good work on the potato house.

If foundation is built of stone, the cost of lime and sand will vary according to shape of stone. If the stones are rough or uneven it will take considerably more.

I will try to give a complete bill of lumber and all other materials needed in the construction of both the 20x20 and the 20x40 house.

Lumber Bill for 20x20 Potato House.

Framing:—

4 pieces 4x12—20, sills.....320 feet
46 pieces 2x4—12, outside studding.....368 feet
40 pieces 2x4—10, inside studding.....266 feet
8 pieces 2x4—20, plates.....106 feet
80 feet 1x4, any length, to tie studding.....60 feet
10 pieces 2x6—20, joists.....200 feet
220 feet 2x4, any length, stringers to nail boxing to 220 feet
22 pieces 2x4, rafters.....205 feet
10 pieces 1x6—10, wind beams.....50 feet
100 feet 1x3, any length, lathing.....150 feet

Boxing for outside, inside, and overhead gables.—

80 pieces 1x2, outside boxing.....960 feet
1320 feet boxing, any width or length, for inside and overhead.

Overhead must be shiplapped, or strips will have to be added to bat cracks with. Outside boxing can be shiplapped if so desired and save strips

For Shelving or Bins:

10 pieces 2x6—10, pine, studding for bins.....100 feet

15 pieces 2x6—14, oak, cut once, sleepers for bin ....210 feet
140 pieces 1x3—18, floor for bins .. ..630 feet

The 1x3 can be any length, but are best full length if they can be had. If not, they can be used shorter length, but are very troublesome and unhandy.

There may be some very few pieces of lumber needed that I have not named, but this is practicaly correct, as I have made out bill for more than twenty potato houses. This gives me a chance to estimate cost very closely.

As seen above, 4,225 feet of lumber will be required for the house, and 940 feet for shelving, making a total of 5,165 feet. At $12.00 per thousand, this will make the total cost for lumber $61.98.

Lumber may cost more in some places, but in this vicinity it can be bought for $12.00 at the sawmill. But whatever the price of lumber, the total cost may be easily estimated.

Following is an estimate of other materials needed for roofing, etc.:

Roofing if made of galvanized iron (which I would advise above everything, because it is safer from fire and outlasts the painted iron) on building 20x20, with 14 foot rafters, will require 606 square feet, or six squares and 6 feet. At the prevailing price here of $3.75 per square, would cost $22.72. Fifty cents should be added for nails.

If shingles are used for roof with 4-inch courses, would take 5,500 shingles, which may be estimated at the price prevailing in your locality.

140 brick will be required for flue, at a cost of about $1.75. Flue plate and hangers will cost about $2.00.

Three set of 12-inch strap hinges for doors will cost 50c per pair, or $1.50.

Be sure when hanging to insert good, stout pieces to hang doors to, for they will be very heavy and if not well supported will soon begin to sag, causing a lot of trouble.

Nails for the entire building should not cost over $3.00, as follows: 40 lbs. 10 penny; 20 lbs. 8 penny; 20 lbs. 20 penny; 20 lbs. 40 penny Total, 100 pounds.

The builder may use any priced stove desired, but cast stoves are the best about No. 22 or No. 24 box heater being a good size. Wood stoves are far best except at processing time, when a coal stove is preferable. But coal stoves are not best except at processing time, as it takes them too long to get hot, and often you only want to warm the air a little. Sheet iron stoves are no good, for keeping them hot so much during processing time burns them out soon. And they rust badly on account of dampness. About one or two seasons is as long as they will last.

Thermometers should be beside every door, which takes two at a cost of about 20 cents each for cheap ones. But it is best to get good ones, so they may be relied upon.

Complete Estimate of all Costs.

Lumber, about	$65.00
Roofing	23.00
Brick	1.75
Flue plate and hangers	2.00
Hinges	1.50
Nails, 100 lbs.	3.00
Total	$96.25

For 20x40 Foot Potato House

Will not go into details on 20x40 house, but will give an estimate of cost, with an estimate of lumber required to construct same. From the diagram the builder can tell what shape to arrange the bins. Of course in the larger house it will take some more material, more shelving, and more expense for doors, etc. The inside of house will be entirely differently arranged.

The bins across ends of the house will be the same as in 20x20 foot house, except that the bins should be seven feet deep from aisles to wall. The aisles will be five feet wide, making a space of 12 feet from bin and aisles on either end, or 24 feet altogether, thus leaving 14 feet space between the aisles. Then a bin 14 feet long should extend along either side of the house, lengthwise, from aisle to aisle. These bins should be 6½ feed deep, and will leave a center aisle 4½ feet wide lengthwise of house, connecting with the aisle on either end.

By building this way it gives plenty of air space and room for sacking and crating for shipping. You will receive lots of orders when it is too cold to have doors open, and in that case you must positively have room or you cannot fill anything like a car load at a time without taking some out, which must be prevented if possible.

In estimating cost of building I have not estimated cost of labor, for the price of labor varies in different localities, and as stated before, a foreman is the only high-priced labor that is needed.

Following is the materials needed for 20x40 house:

Framing:—

6 pieces 4x12—20, sills	480 feet
64 pieces 4x12—12, outside studding	512 feet
60 pieces 2x4—10, inside studding	340 feet
16 pieces 2x4—20, for plates	213 feet
20 pieces 2x6—20, joists	400 feet
160 feet 1x4, any length, to tie studding	160 feet
440 feet 2x4, any length, stringers	440 feet
44 pieces 2x4—14, rafters	410 feet
22 pieces 1x6—10, wind beams	110 feet
300 feet 1x3, any length, lathing	300 feet

Boxing:—

120 pieces 1x12, outside boxing	1440 feet

1320 feet, any length or width, inside boxing and overheaded gables.

For Shelving or Bins:—

26 pieces 2x6—10, steading for bins .. ..260 feet
40 pieces 2x6—14, oak, sleepers for bins ....560 feet
156 pieces 1x3—18, flooring for end bins .. ..702 feet
150 pieces 1x3—14, flooring for side bins .....525 feet

The material for sleepers are given 14 feet long. They are to be cut and two sleepers made from each timber.

If 1x3 cannot be had full length, they can be made up of shorter lengths.

This gives a total of 8,172 feet of lumber to complete the house, as nearly as can be estimated.

It will take nearly 12 squares of roofing and at $3.75 per square the roofing will cost $45.00.

Other materials needed are asfollows:

Brick	$1.75
Flue plate and hangers	2.00
Hinges	3.00
Nails	5.00
Lumber, at $12.00 per thousand feet	98.06
Roofing	45.00
Total	$154.81

It does not take much larger stove for the larger house than for the small one.

These estimates on construction are about as near as can be put on paper, as I don't suppose anyone has built more potato houses or made out more bills for them than I have. I have taken into consideration the prices for material prevailing in this locality. In some places it may be had cheaper, while in others it may cost more. While the builder wants to save all the expenses he can, the vital point is to get everything right, even though it does cost a little heavy, as it is better to save potatoes after they are made and housed than to lose them by trying to save a few dollars in cost of house.

Digging Potatoes.

Digging potatoes is a job which most everyone dreads, but if done on a system planned out ahead it will not prove such a task.

There are various methods of digging, some claiming one way the best and some another. But there is one thing that must be guarded against under any method, and that is the shinning or bruising of potatoes. They positively will not stand bruising. They must be han-

dled very carefully in taking them out of the ground and afterward.

Since I commenced raising potatoes on a large scale and keeping them in potato houses, I have used a 10-inch middle buster to plow them up with. This is very expensive, as you have to plow deep enough not to cut any of the potatoes or shinn or bruise them. This deep plowing of course covers up lots of potatoes which must be scratched out by hand. To scratch them out with rake or other implement would scratch and bruise them and put them in bad condition for keeping, thus losing more than you save in cost of digging.

The system I use is as follows:

I have boxes or crates in which to handle the potatoes, made as follows: End pieces are cut 12 inches long from ¾x12-inch oak lumber, making ends 12x12, Sides and bottom are ⅜ inches thick and 16½ inches long. These crates hold about one bushel. It figures a little more than a bushel in cubic inches, but in digging you sometimes fail to get them full on account of dirt sticking to them.

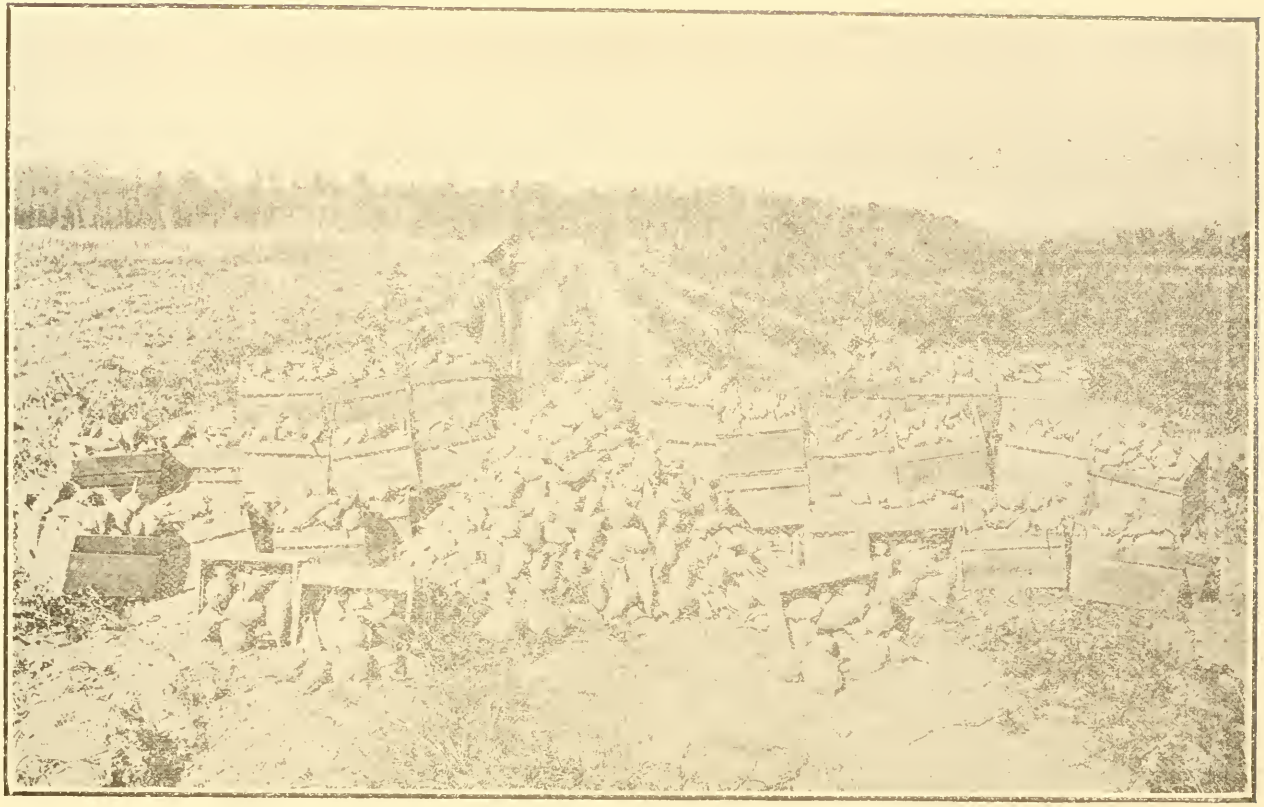
Right here I wish to say that the grower should have all crates and his house put in readiness during the summer, when he has plenty of time to clean up his house, for it is sure to get very dirty during the shipping season; and repair all crates that become bursted or sides broken so as to have them ready when the busy season comes on.

Also have bolster springs for all wagons used in hauling potatoes from field to house, so as to avoid bruising.

If the vines are large when all things are in readiness for digging which they are sure to be if the season is good on potatoes, I take some small plow to drag them off with. The vines can be cut away with a hoe, but this is very slow and is not advisable unless the vines are wanted for feed. They are very fine for filling silos with. Any kind of a plow is good for dragging the vines off with. I always use a one-horse turning plow, which seems to do the work better than anything I have ever tried. Of course this leaves them in such a shape that they are not much good for feed, but as this is the busiest season in the potato grower's crop, he does not care much for the vines, further than to get them out of the way and save his potatoes.

After vines are out of the way I take the 10-inch middle buster spoken of above. And here I wish to say that there are some middle busters that do not go deep enough to get the potatoes in deep soil. It takes a good sized team to get under them. They will not keep if cut in digging.

After being plowed up the potatoes are dug out by hand and placed along the side of rows in small piles as far apart as can be laid—say about an arm's length either way. They are then allowed to lay here an hour or two, or even a half day does not hurt, so as to let all wet dirt on them dry. Generally it is advisable to plow up every other row, so as to leave more room for working. If every row is plowed up at one time, it will cover up the potatoes that are thrown



Potatoes from my 1910 crop, crated and piled up for photograph only.

over the sides very far. After every other row is dug, then the alternating rows which were left may be dug in the same way.

After they are sunned or dried, pick them up, taking only the ones that are large enough for eating purposes. I usually take them down to 1½ inches in diameter, as this is the size used by canning factories. They require them to be at least that large. Then pick up the smaller ones, which are to be saved for seed. By thus separating them in the patch it does not have to be done at shipping time, and saves handling them twice.

Handling potatoes is a very particular job, as one has to be very careful not to bruise them, especially if they are to be hauled very far. The crates that I have advised using fit exactly in a wide-tread wagon. I fill bottom of wagon bed, putting in twenty crates. I then put a frame on this tier of crates and put in second tier. This frame can be made of 12x6 inch lumber. I take five pieces long enough to lay crosswise in wagon box, and then take four pieces length of wagon box, nailing them together well. After you are through digging put these frames away for another season.

After putting loaded crates in wagon box in this way, pack vines around where they might jolt or jostle about any, jostling in the wagon will shinn them up, and even though they should not rot, it makes them look bad, and bad samples always make bad sales. You can never expect to sell a horse with blemishes all over him for as much as a sound horse. And the same way with potatoes.

If you land only a short distance, it is not necessary to fix for double-decking, as it takes more time than you will save in hauling.

Putting Potatoes in House.

After potatoes reach the house they should be emptied upon the floor of the bins. Let one hand get at back side of bin, take crate and turn it upside down, letting potatoes all fall out at once. Do not tip crate over slowly so as to let potatoes roll out one at a time, as this will shinn them up. Hold crate close down to floor as possible so as to bruise potatoes as little as possible. Fill bin to bottom of sleepers of the bin to be put in above, or, thirty inches deep. This will leave an air space of six inches, which is very essential. Nail five 1x3 strips (one inch space between them, as described before under house instructions) up in front of bin, which will go up about 21 inches. This is high enough for the front, and potatoes may be sloped up toward the back to thirty inches deep. The slope at front gives plenty of room for air to get back under potatoes in the bin above.

When bin is full as described above, put in flooring for next bin above, and fill in the same manner as the one below. And right here I wish to impress on the mind of the reader that these floors must never be nailed down. Stack them up next to the wall when

Scene in potato field at digging time, showing teams and laborers required to handle large crops.

bin is empty, as this will give room to empty up crates and clean up house after the potatoes are out.

Always fill one bin at a time, except when one is being filled with eating potatoes and another with seed potatoes. If the seed potatoes can possibly be held back, they should never be put in until the lower bins are filled with eating potatoes, as the seed potatoes are smaller and require more attention, and should be placed in the top bins if possible. They will get more air from above than they will from below.

Potato Diggers.

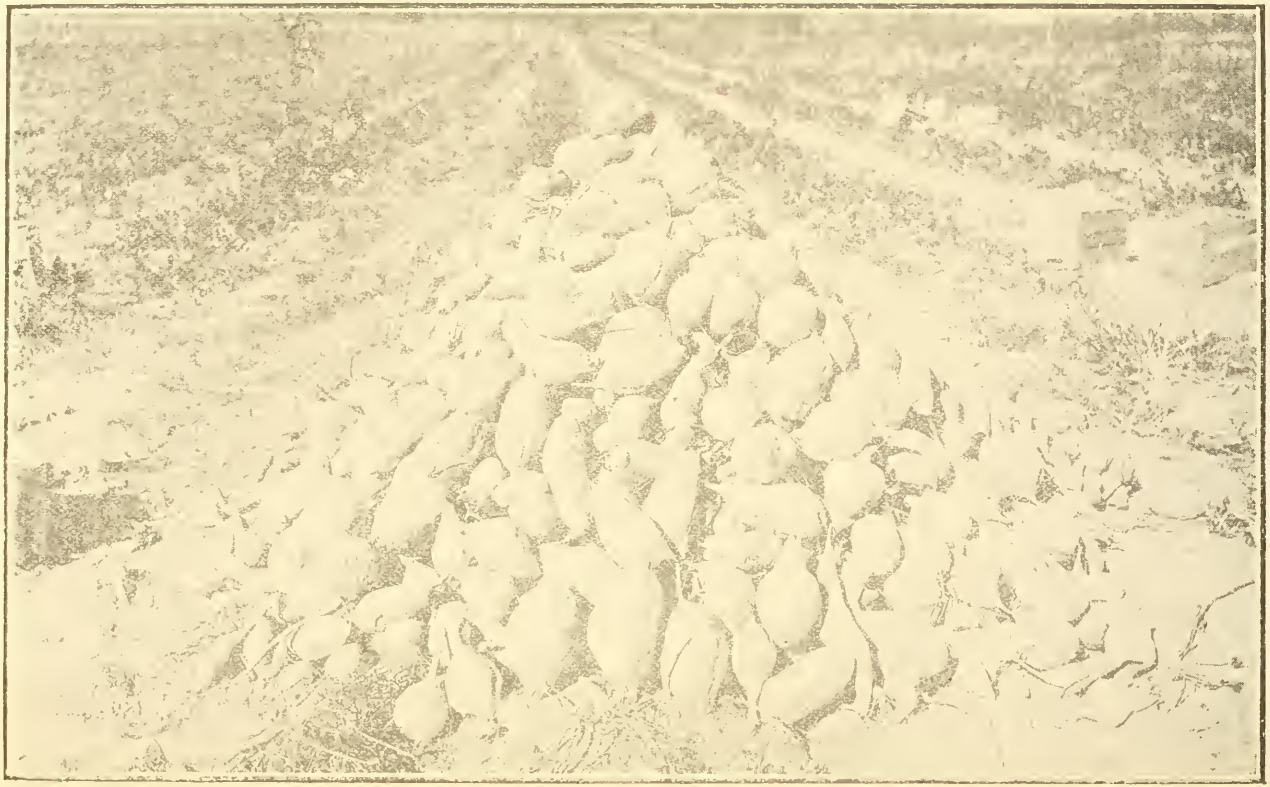
A few words about potato diggers. There are a hundred and one kinds on the market, but i do not recommend them, as I know but little about them. I have tried a few, but found them no good. All that I have tried were very small outfits. Some were in the shape of big sweeps with fingers attached to under side and run back a distance of 18 to 24 inches But these are not good, for the reason that you cannot get them in the ground deep enough to keep them from cutting the potatoes off, which will cause them to rot.

Then there are several makes of elevator diggers, which are fine for Irish potatoes, but I do not know they will work with sweet potatoes. I am going to try one this season, 1912, manufactured by Hoover Manufacturing Co., of Avary, O., but I do not know what it will do, as I have never tried it. I have in my possession testimonials from men who have used them, and if they are what they say they are, they will do the work. If they do the work all right, one will pay for itself in digging 20 acres of potatoes

Bear this in mind, that you cannot use anything that will skinn, bruise or cut the potatoes, unless you are figuring on selling them to a canning factory or canning them yourself This is what I propose to do after this season, canning all that my house will not hold and all cut or bruised ones. By doing this the grower will have a chance to save all damaged potatoes and not be puzzled over room to keep them, because you cannot tell at transplanting time what you will have for a crop. You might figure on a yield of 150 bushels per acre and get 250, and if you had intended using a 1000 bushel house you would come up short on room.

Keeping Sweet Potatoes.

Keeping sweet potatoes after they are housed seems to be the one job dreaded by most growers. During all my life I have noticed the dread that is constantly on the mind of any grower who has a large surplus of sweet potatoes. They do not know what to do with them after they are dug, as they are almost sure to rot some time during



Sweet Potatoes from my record crop of 1910, which produced 570 bushels per acre.

the winter. But in this section this does not bother the grower any more, for the potatoes are always put in potato houses. But up to within ten years ago they rotted here as they do in other localities. But the people have gradually learned more about them, and now, unless there are more potatoes than houses will hold, they are kept through the winter with no fear of loss.

The main thing in keeping potatoes is the right processing on the start. That is, the first ten days or two weeks after they are dug.

The system of processing will have to vary on different potatoes, depending upon condition of soil on which they are grown, condition of potatoes when dug, and condition of season at digging time.

Potatoes in a very dry year are easily kept, unless there is lots of rain just at digging time, which makes them the hardest of any to keep, for they burst open making deep cracks in one or both sides of the potato. These are the easiest of any potato to rot. On account of growing in dry weather and then getting so full of sap just at the time they ought to be matured, they are second growthy, which makes them hard to do anything with.

Then different soils make some difference as to their curing qualities. Where there is red clay in soil, they take less curing than in any other soil. If there is any part of sticky land, or soil that is inclined to run together the least bit, it makes a potato that is hard to keep under any kind of conditions. It seems that they will never cure without going down some. Something in the land that seems to make them rot. Whenever you begin to drop them, which will be explained later, they are inclined to swivel at the ends too much, and after a few weeks they are inclined to heat. After they pass this stage they are no more trouble until handled again. Such land is not good for potatoes in any kind of year, for in dry seasons they will not make anything, and in wet years they will not keep, so it is the best policy to let that kind of soil alone when growing potatoes. Very often such land is very bad for briars and persimmon grubs, which cause disease of potatoes, which will be explained later on.

Sandy land makes potatoes that keep in almost any kind of a season. It also makes the best potatoes, as they do not burst open so bad after a dry season with lots of rain later, as it holds moisture longer than any other kind of soil.

When to Fire Up Stoves.

As soon as potatoes are stored in house, fire should be started in stove, and if weather is cool while digging, it is best to have some fire while digging. And if weather remains cool longer than a week or ten days, it is best to go to processing them. While it is not best on the last ones dug, yet it will keep them if watched closely. If the weather is colder than 56 degrees, or even 60, there should be some fire every day, and the potatoes aired every day, leaving house open at least one hour in morning and one hour at night, un-

Potatoes crated in field ready to be hauled to potato house.

less it is frosty, when they should be aired about thirty minutes, with all doors and air holes open. If the thermometer stands above 56 or 60 during digging time, keep doors open all the time, night and day, no matter how high the thermometer should register, even if it should go to 80 or 90 degrees.

After digging as spoken of above, start fire, closing the doors and air holes holes tight; except when atmosphere is warmer outside than inside, which is not very likely to be at this season of the year. Keep the doors and air holes airtight, except as spoken of above, and try to bring the temperature up at least ten degrees every day, giving the house air with all doors and air holes open at least one hour each morning and evening. Bear this in mind, to keep all doors and air holes open when the air is warmer outside until the potatoes go to the required heat, and then open house up afterward every time the air is as warm outside as inside. Keep raising the temperature. If you cannot get it up ten degrees each day, raise it all you can until it gets about 85 or 90 degrees. If it has been raining a lot about digging time, stop the temperature about 85 degrees. If it has been a dry year and rained a lot at digging time or just before, run the temperature up to about 90 degrees. If it has been very dry all the season and stays dry through digging time, do not run the temperature higher than 75, and for an ordinary year, about 80 degrees is sufficient. In fact, 80 degrees is the supposed temperature to run them to, unless they are very wet when put in the house. Hold them to this temperature, giving air at right times as mentioned above. And at all times when you can get within 10 degrees of this temperature, open up house and let in sunshine. Keep potatoes to temperatures described above for a period of 10 to 15 days, according to the condition they get in, as described below, noticing these conditions very carefully:

When potatoes show up as above, cease firing and let the temperature drop gradually, not over 6 to 8 degrees each day, until you are down to 56 or 60 degrees, giving them all the air that the weather will permit. When you stop firing, open the air holes, and do not close them any more except when it is cold—say 40 degrees or colder. Then it is best to close them, opening them a few minutes each day to let the foul air out.

The Ventilating Fan.

I will give a short description of the fan ventilating system which I am using. Potatoes will keep without it, but it helps greatly. By its use you can save all cut potatoes, and it helps greatly when the potatoes are wet with mud in a bad season, which the grower is likely to have some years.

I use a common blacksmith's blower, No. 1, for a 20x20 house, and No. 2 or 3 for the 20x40 house. I put them as near to the ceiling as I can get them, and put my line shaft in a small opening over one of the doors. The opening may be made from 1x4 inch lum-

ber, which will make an opening three inches square, inside measurement. Your engine must be on the outside, for if you do not use an air-cooled engine, the boiling water from engine tank will cause a dampness to rise which will damage the potatoes. And it is safer to have these engines on the outside anyway.

Estimate the speed of engine so as to run No. 1 fan 3800 revolutions per minute; No. 2, 3500; and No. 3, 3200. They have to be run at above speed to throw the air like it ought to be thrown, with all the force that the fan will possibly bear.

For conveying the air throughout the building, I use what tinners use for "down spouting," or 4 or 5 inch gas stove piping. This is good unless the air loses out at the joints or elbows. With the exception of this objection, it is by far the best, for it is easily handled and can be turned about in any direction you may want to use it.

After equipping my house in this way after a day's digging I can throw the air right in under the bins and keep the air circulating. This dries the dampness out, and causes all cut potatoes to seal over so that they will keep better than to be left alone, for they will sure rot if this system is not used. And the bad part of cut and bruised potatoes is, that they rot lots of others.

Marketing Potatoes.

Marketing the potatoes after they are grown is of course the business end of the industry. I have had experience in almost every way imaginable connected with selling and trading potatoes. I have hauled them to town and traded them for groceries, peddled them on the streets, traded them to other farmers for their products, shipped them to be sold on commission, shipped direct to retailer, and have sold them in almost any way that could be thought of. Selling them in nearby towns is best, when they can consume all the supply, but when the demand is not equal to the supply you have to resort to shipping them.

I was in the business until 1906 before I ever shipped a bushel of potatoes. In February, 1907, I shipped one car load, receiving a good price for them. Since then I have been shipping most all my crop. In fact, the past two seasons, I shipped my entire crop, and also handled considerable potatoes for other parties.

As stated above, it is best to sell to nearby towns when convenient, for in this case they only have to be measured, and not weighed. In some states the weight is an excess, as in Texas, for instance, you have to give 55 pounds per bushel, while in Arkansas it is only 50 pounds. Then for local shipments you do not have to buy barrels, crates or sacks to ship in. Also, you run no risk of having potatoes

sidetracked on the road somewhere and damaged or lost in shipment. And you do not have to contend with the bad buyer, which all growers are sure to strike if he deals with very many commission men. All commission men are not this way, however, as I find some of them straight as can be.

My system of selling potatoes that have been kept through the winter is simply this: When all the local potatoes are out of the way and the market is good, I select some nice samples (not too large) and take them to the buyers, showing exactly what I have and can deliver them. I make my prices to them, always allowing for freight rates, because you always have to make a delivered price. No commission man will buy in any way except f. o. b. at his station. This is also advantageous, for the reason that if you are in behind them you can rush them through, while the buyer probably has several car loads of other perishable stuff that needs pushing as well as the potatoes. Hardly any wholesaler or jobber will buy except when delivered.

There are various ways of preparing potatoes for shipment, but all are not good, for skinning them makes an awful bad sample.

The best package is a 150 pound barrel, although in some localities it is very hard to find barrels. If it is very far from factory, empty sugar barrels, apple barrels, onion barrels, are all good, and in a town of any size they can generally be picked up very cheaply. Lime barrels are finest of any second-hand barrel, as the lime is good for the potatoes. I have used sacks for shipping more than anything alse, for I could alwyas get them quickly. But they are not good as barrels. They are the sorriest of any method of shipping sweet potatoes.

The grower must never under any circumstances ship potatoes to a broker, as it is too dangerous a proposition. They are usually a class of business men whom it will not do to trust. If they do get good prices, you will often realize but little out of them.

In loading cars for potatoes, always get refrigerator cars, but be sure there is no ice in the bunks. Also see that car is clean. If car is not clean, and cannot be cleaned, refuse it, for a refrigerator with a salty floor is sure to rot the potatoes quickly. Be sure there is no trash of any kind in the ice boxes. If car is a small one, do not put over 150 bushels in it, if potatoes are in sacks. If packed in barrels, it does not matter how many you put in the car, just so they do not mash each other or skin or bruise up in anyway. If seed potatoes are being shipped, more can be loaded in the car.

PUT STOVE IN CAR.

If it is likely to be very cold while potatoes are on the road, put a stove in the car. In loading the car load from both ends, so as to leave space in the middle of car for the stove if needed.

My plan for putting stove in car is as follows: Use a coal oil

stove. No railroad company will allow a gasoline stove, as it is dangerous. First make a small platform large enough for stove to sit on. Swing this on the ceiling of the car with wire. Then take four 1x3 inch strips and nail them about three feet from wire at ceiling, and then to platform, putting the stoves as close to the ceiling as you can get it. This will keep the air warm if the weather is not too cold. If it gets very cold, it is best to take the stove down to the floor. In this case the attendant has to stay in the car all the time, as the stove might be knocked over by the jolt of the train. This might set the car on fire. In car loads, an attendant is necessary at all times, for in cold weather the stove has to be attended to, and at all times the car must be ventilated at least twice a day. This is very easily done. While the train is moving, open the doors over the ice boxes. If it is cold, do not leave them open but a few minutes at a time; but if warm, they may stay open all the time. Attendant must have a thermometer, both inside the car and outside; on inside, to see that the potatoes are warm enough, and on the outside so as to know how the weather is on the outside and the better regulate temperature on inside.

If all the above directions are followed, though they are brief, there is not much danger of losing potatoes in transit.

After car reaches its destination, do all that is in your power to get it set at proper place for unloading as soon as possible, as the potatoes are always safer in the house than in the car.

Diseases of Potatoes.

In writing of the diseases of sweet potatoes, probably I may not give it as scientifically as some botanists would, but I will try in a plain way that may be understood by all, to give some diseases that have come under my observation.

I have had some trouble with plants not growing well, on account of insects, but not enough to amont to anything serious, as no insects that work on the vines live long enough to entirely kill them. The Army Worm that eats the leaves from cotton does some work in potatoes some years. If there is cotton near the potatoes, and the worms are very bad, they will eat the leaves off the potatoes, which in this case would be good for them. For Army Worms are never very numerous except in very wet summers, and in this kind of season the vines grow too rank and do not let the sunshine into the potatoes. Of course I do not suppose the Army Worm lives further north than the "cotton belt."

BLACK ROT.

The worst disease we have to contend with, is the Black Rot,

which, when in its worst stage, is something very bad. And when it once gets into potatoes, the only way to get rid of it is to change seed, place of bedding, and land, as the land gets full of the disease.

It is very easy to tell when black rot gets into potatoes. In digging, you can see black spots from the size of a pinhead to as large as a half dollar. These spots are always hard and firm as the rest of the potato while in the field. After putting in the house they begin to grow in size and number. When potatoes are dug the spots are only skin deep, but as soon as housed the spots will get deeper, and the rest of the potato will become covered with something that looks like blisters. When they get in this condition, no matter how healthy other potatoes may be, they will contract the disease. If there is enough of them in the house, after five or six weeks they will begin to heat the house, and all affected potatoes will begin to sprout some if they are very large.

If at digging time there is only one potato in the hill that has the disease showing, it is in the whole hill and may break out in the house after the potatoes are stored, some of them showing up even three months after potatoes are dug.

I have taken potatoes at digging time as above and listed it out when I could (as I have been bothered but little with black rot.) Furthermore, when they are affected, you can take one sound potato from the hill and the disease will show up the next year. When once they contract the disease, it stays from year to year, growing worse all the time.

If the disease is in the stock of potatoes, you may pick out sound looking potatoes and bed them, and it will show up on the plants. There will be narrow black streaks on the roots of the plants, sometimes going half way around the plants. And again it may not be seen on the plants, but will show up on the potatoes. An experienced eye will detect it on the plants or potatoes without any black spots showing. The only way out of it when stock has been affected with black rot is to get new seed and change land until the affected land is clear of the disease.

If the grower gets it into his potatoes, he can save his crop from rotting, but it causes them to be sorry for eating purposes. Of course the seed, or small potatoes can be used for stock feed. At digging time if there be very much black rot, put the potatoes in the house as quickly as possible, and begin heating them, airing as much as possible. Run the temperature up to 100 degrees as quick as they will bear it, and hold it there until potatoes begin to sprout. Then cool down to about 50 to 54 degrees, and be sure not to let them go over 60 degrees. If they try to heat too much, go through them and pick out all affected potatoes and carry them far enough away to prevent the odor coming back to the house.

The kind of land that is more subject to black rot is where it had been manured with barnyard fertilizer, or land where there are

persimmon sprouts or oots. Also where the land is filled in, low places where the land is made, and land which runs together is very bad some years. It is worse in wet years than in any other years.

NIMIETOADS.

Next to black rot the worst plague to potatoes is the Nimietoad, a small, egg-like insect which, when grown, is near the size of a mustard seed, or hardly so large. If they have any active power it is more than I have ever been able to detect. They are cream colored, and when grown they break or burst with the least bit of pressure. I have cut open potatoes affected with them and found thousands of them, so small you could see them only in mass except with the aid of a magnifying glass. If they ever hatch into anything else, I have never been able to detect it. I have been in communication with several experts, and none of them have ever given them aanything further than the foregoing.

The effects they have on potatoes are as follows: If the land gets thin, which is the natural breeding place for them, and the land is run continuously in potatoes, they will get so bad that the vines will die in the summer, and what few potatoes there are will be clear of roots, and will not be larger than roots themselves. If the land is cultivated in potatoes continuously after this disease sets in, it will get so you can raise nothing on it. Even corn will die before it tassels, and cotton, peas and sorghum will shed all the leaves off like it had the rust. You can pull up cottton stalks and they will be just one straight root with all the feed roots eaten off.

The only way to get rid of them is to change land and seed, as in black rot. It is a great deal easier controlled than black rot, and does not make the potatoes rot so badly in the house. Potatoes affected with Nimietoad do not need heating as if affected with black rot, but they have to be assorted and the affected ones taken out.

In Conclusion.

Now in concluding this little book, I wish to say that I may have left out some very important things, but I have tried to cover all the essential points to a potato grower, on the various subjects dealt with.

If the grower will follow all the directions carefully, he will not be likely to lose many potatoes. He must use plenty of caution, keeping in mind that to make a success of anything, it must be done right, no matter what it is.

When I commenced to raise sweet potatoes, as explained in the first part of this book, I met with plenty of disappointments. Having

no capital with which to work, and inexperienced, I had a very hard row to weed, but I have staid with the industry until I have made a success out of it.

If there is any particular thing in this book which the reader does not understand, enclose stamp and it will be made plainer if possible.

The estimates of cost of houses are made for this immediate locality. Anyone can figure the cost on the different materials in his own locality, as there are no two places where the cost of all the materials will be the same.

The demand for sweet potatoes is constantly growing, and to my opinion, in a very few years the South can stop so much cotton raising, which is the ruination of the Southern farmer. For the past four or five years I have failed to have anything like enough potatoes to fill my orders. The last season I did not have one bushel for every one hundred bushels I had orders for.

The grower must bear in mind that a good sample is what sells his potatoes, and then live up to the sample. Never in any case ship out anything that is not first-class, as one bad shipment will ruin you with that buyer for good.

There are always some bad potatoes, no matter how good your crop may be or how well cared for. They can usually be handled to good advantage locally, where you can see the buyer personally and sell for a class of trade that demands that class of potatoes. But if these inferior potatoes were put in your carloads, it would damage them quite a lot. And if handled through a commission merchant, he might turn the whole load down because of a few bad potatoes.

One thing about diseases of potatoes. When you contemplate changing seed, it would be a good idea to have a botanist examine a sample of the new seed decided upon, for if the seed is bad it is a sure thing that the potatoes will show up bad in digging. And besides making the stock of potatoes bad, it will cause the land to get full of diseases. It might become inoculated with Nimetoads, and once this gets into the land there is not much chance of getting rid of it, especially this far south, as it takes very hard freezing weather to get them out of the way. Also the black rot can ruin you through the seed potatoes.

CANNING POTATOES.

A few words about canning sweet potatoes. This I believe will be the quickest way to get a good price for sweet potatoes, for when they are canned they are always ready money. In fact, you can always engage them two or three months before they are canned.

It takes a steam pressure canning outfit to can potatoes. You cannot can them successfully in open retorts, for you can only heat them to 212 degrees until the water begins to evaporate, while potatoes have to heat to 240 degrees to kil the germs so they will keep.

There are some canning outfits with steam pressure on the mar-

ket. They come a little higher than the open retort outfit.

I find that the best plan in operating a home canning outfit is to sell your pack before you begin canning. Then when you are canning, all you have to do is to ship your goods out as fast as they are ready. Always try to sell to the best dealers—the ones who have the widest trade.

After this season I expect to can all my culls and damaged potatoes. And if it proves a success, I am expecting later to can everything above the seed size.

OVERPRODUCTION NOT POSSIBLE.

And this I wish to say about the sweet potato industry. Do not get into your head that there will be an overproduction. Some growers have written me that they had only a small amount of potatoes, and they rotted on their hands before they could sell them .

Now if these growers had been prepared to take care of their potatoes, they would not have had enough to last their customers until winter set in good. In their case, what potatoes they could keep were damaged, and the dealers were afraid to handle very many at a time, making it very troublesome, and not much profit either to the grower or dealer. If they could have kept their seed potatoes until spring, they would have made a great deal more out of their crop than they did in the way it was handled.

PRICE OF THIS BOOK.

Now, as to the price of this little book. I would be glad if I could put it out as a bulletin through the Government, and let every farmer have it free for the asking. But I have been to considerable expense getting it up, going into all the details so as to make it as plain as possible. I have spent ten years of my life in the sweet potato business, and I am now giving my experience of all these years for the small amount asked for this book, which is very cheap, considering the amount of information it contains, and the profit it will prove to everyone who reads it and grows and cares for potatoes according to the suggestions herein.

The Original Fuller & Johnson Steel Frame Bemis Transplanter

Is the only practical machine for transplanting tobacco, cabbages, sweet potatoes, tomatoes, strawberries, nursery stock.

Better Than By Hand

Plants set by this machine start sooner — Mature more evenly.

It not only saves time in labor but results in increase in yield per acre.

Set your plants when ready. You don't have to wait for rain. Each plant is watered at the roots and is covered with dry earth, hence no baking of soil around the plant.

The only transplanter withevery feature necessary for every purpose and with every adjustment desired.

ITS DISTINCTIVE FEATURES AND ADVANTAGES are:

The floating shoe.

The soft steel center high tempered and polished pressure plates.

The uniform pressure on uneven ground.

The absolute and quick device for regulating the quantity of water required.

The perfect spacing device.

The equalization of droppers weight in applying pressure to the pressure plates and shoe.

Strength, durability and simplicity.

Users of the Bemis EVERYWHERE will testify to its superior merit.

Buy only the original Fuller & Johnson Bemis Transplanter made by

Madison Plow Company

Manufacturers also of Plows, Harrows, Cultivators, Corn Planters, Etc., Etc.,

Write for Catalog

DEC 30 1912